Petronila Creek Dissolved Solids TMDL
Draft Stakeholder Meeting Summary
April 15, 2004
Robstown, TX

Stakeholders Present:

Name	Organization
Anna M Bernsen	Stakeholder
David Reagan	Stakeholder
Leon Bernsen	Stakeholder
Rocky Freund	Nueces River Authority
Beth Payne	ESET
Julio Garcia, Jr.	Nueces County Drainage District # 2
Andy Garza	TX State Soil and Water Conservation Board
William “B.J.” Thompson	TX Railroad Commission
Ken Faughn	Robstown Area Development Commission
Edward Jungmann	Nueces County SWCD
Ken Kerrihard	Continental Resources, Inc.

Stakeholders Absent:

Name	Organization
Walter Jeffery	Apache Corporation
Noe Ovalle	City of Agua Dulce
Bobby Castillano	City of Driscoll
William J Ordner	Mayor, City of Petronila
Doug Duncan	TX Ecologists, Inc.
Jerry Faske	Nueces County Bishop Driscoll Drainage District 3
Ramiro Carrion	Nueces County Drainage and Conservation District 2
Brandon Hall	Western Gulf, LTD

Project Technical Staff:
Kerry Niemann – TCEQ Project Manager
Raed El-Farhan – Louis Berger Group
Mark Kelly – EA Engineering

Others Present:
Earlene Lambeth – TCEQ Facilitator
Kelly Ruble – TCEQ Region 14
Brian Holmes – TCEQ Region 14

Earlene Lambeth of the TCEQ opened the meeting with introductions, handouts, and a survey questionnaire to assist in evaluating how effective the community-based, collaborative watershed efforts are in contributing to the protecting of Texas's natural resources. Stakeholders were encouraged to complete the form and return to the TCEQ by fax at (512) 239-1414 or by mail at PO Box 13087, MC 150, Austin, TX 78711-3087. Introductions were made around the meeting room.

Kerry Niemann began the technical presentation presenting data results for the Petronila Creek Dissolved Solids Impairment TMDL. A brief review of the projects' original segments that were listed on the 2000 Clean Water Act 303(d) list for Total Dissolved Solids was given. The San Gabriel River (Segment 1214) has been de-listed as well at Brushy Creek (Segment 1244) based on data and the concentration levels being below the standard criteria. The remaining segments being studied include the Colorado River below E.V. Spence Reservoir (Segment 1426) and Petronila Creek (Segment 2204). The evenings' discussion will pertain to the completed data results and summary of Petronila Creek. Petronila Creek was listed on the 303(d) list because it did not meet the water quality standards for chloride, sulfate and total dissolved solids (TDS), exceeding the segment specific criteria of 1500 mg/L, 500 mg/L, and 4000 mg/L. The designated uses for Petronila Creek include aquatic life, contact recreation, general use, and fish consumption.

Mr. Niemann explained the geography of the watershed that has a total length of approximately 44 miles. In FY03 the Non-point Source Program at the TCEQ had contracted with the Texas Railroad Commission to plug abandoned and non-compliant wells to eliminate potential sources of salinity within the watershed. 36 wells have been plugged to date. A slide was presented showing the non-compliant and injection oil wells, showing the most density in the watershed with a large concentration east of Driscoll.

The chloride constituent levels were summarized and discussed for each station being monitored in Segment 2204. The results are summarized as follows:

Chloride Data

- Station ID 13099 (Petronila Creek at FM 2826 North of Driscoll) – Geometric Mean Below Criteria
- Station ID 13098 (Petronila Creek at US 77) – Geometric Mean Below Criteria
- Station ID 13096 (Petronila Creek at FM 665 East of Driscoll) - Geometric Mean Above Criteria
- Station ID 13095 (Petronila Creek at Beatty Road) - Geometric Mean Above Criteria
- Station ID 13094 (Petronila Creek at FM 892) - Geometric Mean Above Criteria
- Station ID 13093 (Petronila Creek at FM 70 East of Bishop) - Geometric Mean Above Criteria
- Station ID 13030 (Unnamed tributary to Petronila Creek at FM 70 near Stanolindluby) - Geometric Mean Above Criteria
- Station ID 13032 (Unnamed drainage ditch to tributary to Petronila Creek at Beatty Road) - Geometric Mean Above Criteria

Mr. Niemann summarized the chloride data first from samples that were collected from January 2003 through November 2003. During this period of time there were seven events. Rainfall and storm events were discussed and compared to the data results. He pointed out how low the sampling results were for Station ID 13098 which is Petronila Creek at US 77, but then go downstream at Station ID 13096, which is Petronila Creek at FM 665, just east of Driscoll, and the sampling results are extremely high. Mr. Niemann asked the stakeholders, who know the watershed the best, to think about what could be causing these spikes and the impairment?

The next constituent summarized and discussed was sulfate. The sulfate results are summarized as follows:

Sulfate Data

- Station ID 13099 (Petronila Creek at FM 2826 North of Driscoll) – Geometric Mean Below Criteria
- Station ID 13098 (Petronila Creek at US 77) – Geometric Mean Below Criteria
- Station ID 13096 (Petronila Creek at FM 665 East of Driscoll) - Geometric Mean Above Criteria
- Station ID 13095 (Petronila Creek at Beatty Road) - Geometric Mean Above Criteria
- Station ID 13094 (Petronila Creek at FM 892) - Geometric Mean Above Criteria
- Station ID 13093 (Petronila Creek at FM 70 East of Bishop) - Geometric Mean Above Criteria
- Station ID 13030 (Unnamed tributary to Petronila Creek at FM 70 near Stanolindluby) - Geometric Mean Above Criteria
- Station ID 13032 (Unnamed drainage ditch to tributary to Petronila Creek at Beatty Road) – Geometric Mean Above Criteria

Pointed out in the sulfate summary, when flow is low…values are high, when flow is high…values are low. What does this indicate? Now that the sampling results are in, the project team will begin to analyze the data taking into consideration factors such as baseline and storm event situations, suspect impairment sources such as groundwater migration, geology, non-compliance salt water injection wells, and oil and gas wells.

Total Dissolved Solids (TDS)

- Station ID 13099 (Petronila Creek at FM 2826 North of Driscoll) – Geometric Mean Below Criteria
- Station ID 13098 (Petronila Creek at US 77) – Geometric Mean Below Criteria
- Station ID 13096 (Petronila Creek at FM 665 East of Driscoll) - Geometric Mean Above Criteria
- Station ID 13095 (Petronila Creek at Beatty Road) - Geometric Mean Above Criteria
- Station ID 13094 (Petronila Creek at FM 892) - Geometric Mean Above Criteria
- Station ID 13093 (Petronila Creek at FM 70 East of Bishop) - Geometric Mean Above Criteria
- Station ID 13030 (Unnamed tributary to Petronila Creek at FM 70 near Stanolindluby) - Geometric Mean Above Criteria
- Station ID 13032 (Unnamed drainage ditch to tributary to Petronila Creek at Beatty Road) - Geometric Mean Above Criteria

Another item that Mr. Niemann touched upon and explained was that Mr. El-Farhan would be elaborating on later during the meeting was work through the Bureau of Economic Geology to conduct Electromagnetic Conductivity Surveys along the stream segment. If the study can be done, the first item would be to conduct ground surveys and then airborne surveys if data warrants it. A presentation could possibly be given to the steering committee later if indeed we will be able to follow through with the surveys. TCEQ is trying to identify funds for the study and will know more at a later date.

Next on the agenda was a presentation given by Mr. Raed EL-Farhan of the Louis Berger Group, Inc. He gave a brief recap from the previous meeting discussing a Total Maximum Daily Load (TMDL) and its process, data, Water Quality Standards. The listed segment of Petronila Creek referred to as Segment 2204, which runs from the confluence of Aqua Dulce Creek and Banquete Creek to a point 0.6 miles near the Laureles Ranch in Kleberg County and covers approximately 44 miles.

Collecting the proper data is being done to build a model that we will be able to assess the source(s), pollutant, or stressor(s) and all the various issues included in the entire watershed. Various amounts of data are used to characterize the watershed. Land use is characterized and being studied is predominantly agriculture at 83%, 15% rangeland and covers about 347 acres. 16 water quality-monitoring stations were placed in the watershed to collect the data required for the TMDL study.

Mr. EL-Farhan stated that the water quality standards are regularly being exceeded under both wet and dry weather flow conditions, which complicates the development of the model. The sources of chloride and sulfate include sources that contribute to wet weather flows, a detailed model is required to determine the pollutant loads from different types of nonpoint sources and their transport mechanisms. It is important to understand "why" and the data is not always consistent during wet or dry weather periods. There are many questions still to be answered, and data collected that will be analyzed through the modeling process.

Some of the points made that will be necessary for the Hydrologic Simulation Program Fortran (HSPF) Model are as follows. A hydrologic model will "mimic" the stream and will represent the watershed of Petronila Creek. The HSPF model is a state of the art modeling system developed by the Environmental Protection Agency (EPA). The model will take into consideration stream flow, physical characteristics of the watershed, and weather rainfall data supplied from records gathered from the Corpus Christi Weather Service Forecast Office and other gauges throughout the watershed as well.

The project team will divide the watershed into different sub-segments and analyze each one of the sub-segments, running a simulation on each one so that estimates of salinity concentrations can be determined. Sources of salinity being considered include natural and human, direct or indirect sources. Natural salinity sources include geologic formations and biological sources. Potential human sources include six permitted facilities that are located in the Petronila Creek watershed that discharge around a million gallons a day, brine pits and injection wells, and suspect leaking wells. Well data is certainly a source that needs to be considered in the modeling. Oil-related sources include locations of known oil field operations, wells, and brine pits in the watershed.

The watershed is a very complex system. It is not yet possible to discern between the various sources of salinity in the shallow or the deep subsurface. Therefore, a study is being proposed in two phases through the Bureau of Economic Geology (BEG) that will assess that salinity sources contributing to the impairment of Petronila Creek. The data collected through the proposed study would be used to define pollutant-loading rates for the water quality modeling. The data would be useful in the implementation of required pollutant source reductions determined from the TMDL process. The results from the BEG source assessment study will be directly incorporated in the development of the HSPF model.

The airborne electromagnetic (EM) methods would be used to map the salinity sources in the watershed. Also, these analyses would estimate the percentages of anthropogenic and natural sources in the analyzed water samples, shallow and deep water, or salinity. The study would take approximately 3 – 6 months to complete. Comprehensive meetings have been taking place and upper management is trying to secure the funding for the project. It is estimated that the study would minimize replication of efforts and conserve resources because of the substantial benefits gained through obtaining the data from the EM study.

After the study, the program team will continue to analyze the data and investigate sources of salinity in the watershed. The model input parameters will be finalized and a calculation of the salinity loading from identified sources will be made. The team will be getting back with the stakeholders to present modeling results and the draft TMDL, at the next meeting.

Questions received during the stakeholder meeting:

Question – Please define "non-compliant"?
Answer – The Railroad Commission considers wells that are leaking, not cased properly, plugged properly or abandoned to be "non-compliant".

Question – Is Baffin Bay being affected by the pollutant(s) from Petronila Creek?
Answer – Yes, the Bay is being affected, but Baffin Bay is meeting its' water quality standards and not listed on the 303(d) list at this time.

Question – Maybe it would be better just to leave the creek alone?
Answer by stakeholder – There is oil on the water in my area! There is oil related issues as well as these other contaminants. I have 50 miles of pipeline on my 200 acres.

Question – Didn't the sulfate drop significantly immediately after that rain event?
Answer – Yes, it dropped significantly.
Question - Could that have been a flushing process if we didn't have enough rain to wash this in?
Answer – The process of washing the pollutant …that is a very important issue. This is a TMDL process, is the water quality standard being met under the existing loading conditions? The answer is no. Why, because we are violating the water quality standards. We are exceeding the assimilative capacity. Well, let's identify our sources. When identifying our sources, we need to understand how much, where is it located, and what's more important is how is it getting into the stream into the listed segment? Is it direct or from a pipe discharging directly into the stream? Or is it something that is basically going over a land area? The point that she is raising is if it is sitting on the land, then is it going to wait and wait and wait until there is a little rain and then it is going to move it toward the stream. A little rain will continue to push it toward the stream. Some of the ground water is shallow and some of it is deep infiltration. Surface runoff will show up quickly whereas the deep concentrations will take longer. The soil is also a consideration such as how sandy or porous the soil is. A lot of times you see initial dilution, because you are getting the non-point source runoff, gives you the first initial drop of concentration. Then what you see after that sometimes is a tail increase that is the concentration coming from the shallow ground water. You see something called a shadow peak.

Question – How often is the data given going to change? The very first meeting we had here a year and a half ago, we said 6 permitted facilities, then the next time it was 4, and now we are back to the 6?
Answer – There is 6 that I know of. At the last meeting we clarified that through the regional office. Some permitted facilities were not included on the list. You are correct, but we have confirmed the number.

Question – Do you realize on CR 18, South of Driscoll, in 1940 there was a blow out, and they totally lost the well and everything? The soil does not produce anything. It could be a potential source.
Answer – Yesterday we observed crops all in there. There are beautiful crops in there.

QUESTIONNAIRE

Watershed Project / Group Case Study

The overall purpose of this questionnaire is to evaluate how effective community-based, collaborative watershed efforts are in contributing to the protection and enhancement of Texas's natural resources. The State's interest is to empower its citizens to help achieve the State's resource management objectives.

Name (can be left blank):

_____

Title: _____

Date: _____

How effective is this group / effort in protecting and enhancing the watershed?

1. What successes has this group had?

2. What are its strengths?

3. What failures, if any, has it had?

4. What are its weaknesses?

5. If there were things that could make a difference, what would they be?

6. Are you satisfied with your local group function and is it effective in protecting and enhancing the watershed?

7. How good is the current relationship with agencies: federal, state, local?

8. Most proud accomplishments of the group?

9. Expected longevity of group (as long as needed, as long as funded, until projects done, etc.)